DCS/115 Introduction to Programming
Test: 9am (4pm), Wednesday 1st March 2000

Example program:

Study this example of a set of classes intended for some sort of fantasy world game. Many of the questions in this test will be based around this example.

```
 1  class Being
 2  {
 3   protected int strength,defence;
 4
 5   public Being(int s,int d)
 6   {
 7    strength=s;
 8    defence=d;
 9   }
10
11   public void hit(int force,int power)
12   {
13    if(force>defence)
14       strength=strength-power;
15   }
16
17   public int morale()
18   {
19    return (strength+defence)/2;
20   }
21  }
22
23  class Monster extends Being
24  {
25   protected int legs;
26
27   public Monster(int s, int d, int l)
28   {
29    super(s,d);
30    legs=l;
31   }
32
33   public String toString()
34   {
35    return legs+"-legged monster";
36   }
37
38   public void attack(Being b)
39   {
40    b.hit(strength,strength/10);
41   }
42  }
43
44  class Dragon extends Monster
45  {
46   String colour;
47
48   public Dragon(String col)
49   {
50    super(100,200,4);
51    colour=col;
52   }
53
54   public String toString()
55   {
56    return colour+" dragon";
57   }
58  }
```

```
 59  class Hero extends Being
 60  {
 61   protected int charisma;
 62   protected String name;
 63   protected Weapon holds;
 64
 65   public Hero(int s, int d, int ch, String nm)
 66   {
 67    super(s,d);
 68    charisma=ch;
 69    name=nm;
 70    holds=null;
 71   }
 72
 73   public Hero(int s, int d, int ch, String nm, Weapon w)
 74   {
 75    super(s,d);
 76    charisma=ch;
 77    name=nm;
 78    holds=w;
 79   }
 80
 81   public String toString()
 82   {
 83    if(holds==null) return name;
 84    else return name+" armed with "+holds;
 85   }
 86
 87   public int morale()
 88   {
 89    return (strength+defence+charisma)/3;
 90   }
 91
 92   public void attack(Being b)
 93   {
 94    if(holds!=null) b.hit(strength,holds.getPower());
 95   }
 96
 97   public void attack(Being b, Weapon w)
 98   {
 99    b.hit(strength,w.getPower());
100   }
101
102   public void pickUp(Weapon w)
103   {
104    holds=w;
105   }
106  }
107

109  class Weapon
110  {
111   protected int power;
112   protected String name;
113
114   public Weapon(String nm,int p)
115   {
116    name=nm;
117    power=p;
118   }
119
120   public String toString()
121   {
122    return name;
123   }
124
125   public int getPower()
126   {
127    return power;
128   }
129  }
```